

# Leading by Example Council Meeting

May 9, 2017

# Agenda



- Welcome & Introductions
- Commonwealth Updates
- Solar Updates
- Linking Installation and Innovative Technologies on State Contract
- Technologies of the Day
- Outreach Documents Discussion
- LBE Updates
- Zero Net Energy Buildings
- Building Presentation & Tour

# Commonwealth Updates

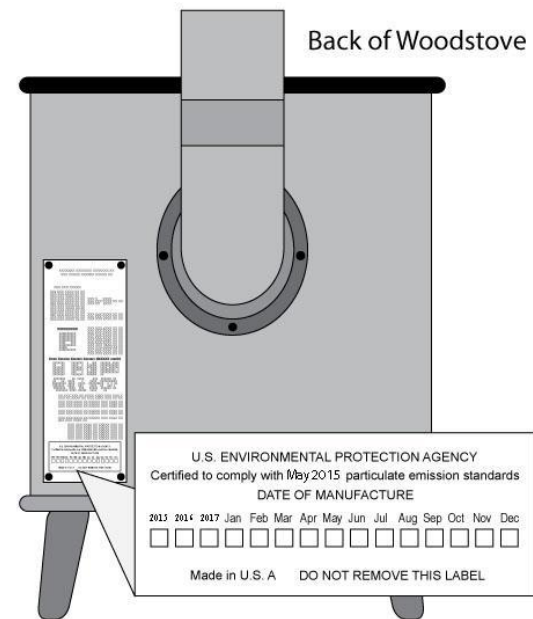
*Creating A Clean, Affordable and Resilient Energy Future For the Commonwealth*



Massachusetts Department  
of Energy Resources

# Woodstove Change-out Program

- \$450,000 funding for 2017 Program (MassCEC, MassDEP, and DOER partnership)
- **Rebates for homeowners from \$500-\$3,000** to swap inefficient woodstoves for cleaner, EPA-certified wood and pellet stove models
- EPA-certified stoves on average:
  - Use one-third less wood to produce same amount of heat
  - Release 70-90% less particulate matter
  - Can save an average of \$5,000 over lifetime
- Since 2012, more than 1,400 MA residents have swapped out woodstoves
- Installer applies for rebate on homeowner's behalf w/ MassCEC by 8/31/17 after installation



[US EPA](http://www.epa.gov)

<http://www.masscec.com/get-clean-energy/residential/commonwealth-woodstove-changeout>

# Affordable Access to Clean and Efficient Energy Programs

## *Programs announced in April:*

1. **Affordable Clean Residential Energy (ACRE)** seeks to fund 6 awards for up to a total of \$3M to nonprofits that serve low-income residents focusing on housing or supplying energy services
2. **Affordable Access Regional Coordination (AARC)** grants to Regional Planning Authorities (RPA) and other public technical assistance organizations to develop programs and provide clean energy training to municipal or community organizations that support low income populations
3. **Zero-Energy Modular Affordable Housing Initiative (ZE-MAHI)** grant program aims help MA achieve replicable improvements in manufactured housing via new modular zero energy housing
4. **Whole Building Incentive Program Request for Information (RFI)**, DOER will gather feedback that will be used to develop a Whole Building Incentive program for subsidized and public affordable housing

<http://www.mass.gov/eea/grants-and-tech-assistance/guidance-technical-assistance/agencies-and-divisions/doer/affordable-access-to-clean-and-efficient-energy-initiative.html>

# Advancing Commonwealth Energy Storage (ACES) Program Reminder

The Massachusetts Clean Energy Center (“MassCEC”) seeks applications under the Commonwealth’s Energy Storage Initiative for energy storage demonstration projects that *pilot innovative, broadly replicable energy storage use cases/business models with multiple value streams in order to prime Massachusetts for increased commercialization and deployment of storage technologies*. Successful applicants will propose projects that showcase examples of future storage deployment in Massachusetts, help to grow the state’s energy storage economy, and contribute to Massachusetts’ continued clean energy innovation leadership

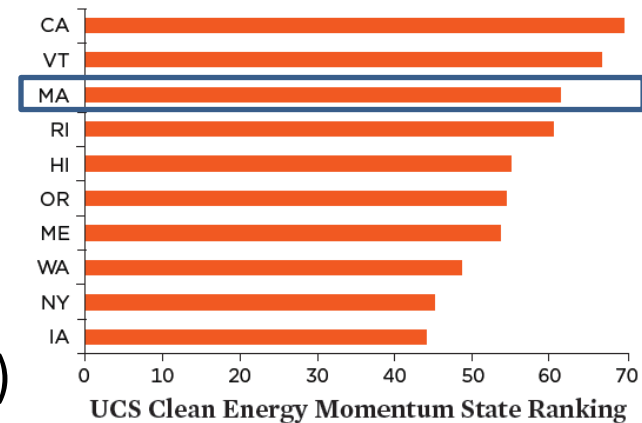
- Total of \$10M available with awards between \$100k and \$1.25M
- Anticipate 10-15 awards
- Awards up to 50% of total -- minimum 50% cost-share
- Eligible applicants: public & private entities, encourage utility role
- **Proposals due 6/9/17 by 4pm**

<http://www.mass.gov/eea/energy-utilities-clean-tech/renewable-energy/energy-storage-initiative/>

# MA 'Clean Energy Momentum' Ranking

- MA #3 Clean Energy Momentum ranking overall
  - (Union of Concerned Scientists, 2017)
- #1 energy efficiency resource standard
- Ranked top 5 in:
  - residential solar capacity per household
  - energy savings
  - clean energy jobs per capita
  - carbon reduction targets

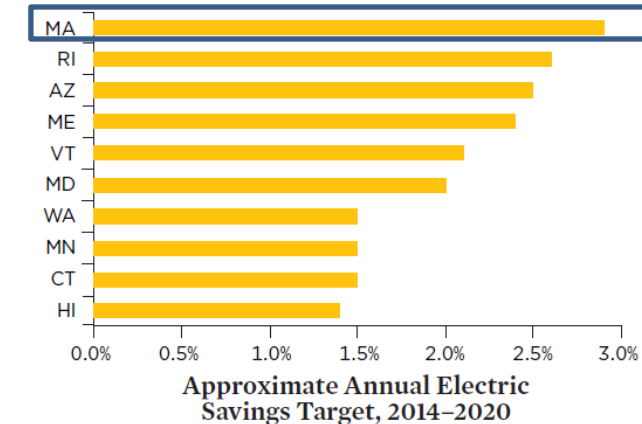
FIGURE ES-1. States Leading the Way in Clean Energy



To determine the clean energy momentum state ranking, UCS analyzed the 50 states on 12 metrics, such as job creation, pollution reduction, renewable energy in the electricity generation mix, and policies to advance clean energy. California leads the way, with strong showings on eight metrics and the number one position in electric vehicle adoption.

Note: For each metric, top-performing states receive a 10, bottom ones receive a zero, and other states are rated according to their position relative to those two benchmarks. A state's overall score is the total of their metric scores. The highest possible score is 120.

FIGURE 13. Energy Efficiency Resource Standard

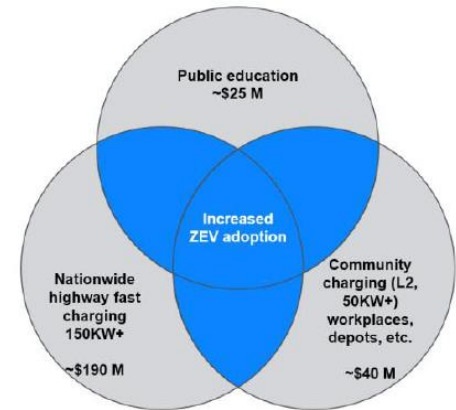


Under energy efficiency resource standards, utilities meet energy savings targets by offering energy efficiency programs to their customers. An EERS is another powerful state tool for clean energy progress. Massachusetts has the strongest EERS, requiring annual electricity savings of almost 3 percent.

SOURCE: BERG ET AL. 2016.

# VW National Zero Emission Vehicle Investment Plan

- \$1.2B investment through 2026 - \$300M every 2.5 years
  - ZEV infrastructure (\$250 million)
  - education (\$25 million)
  - Administration (\$25 million)
- First investment cycle: install 2500+ chargers at 450+ stations
- Includes Level 2 and 50, 150, and 320 kW DC fast charging
- Open protocols for communication



## Community Charging (\$40 million)

- Focus on geographical locations where momentum exists & infrastructure is readily available
- 11 metro areas selected for first cycle including Boston

## Overview of Cycle 1 National Investment Plan

<https://www.epa.gov/sites/production/files/2017-04/documents/nationalzevinvestmentplan.pdf>

## Highway Network (\$190 million)

- Target of 240 highway sites by end of first cycle
- Avg. 66 miles bet stations with maximum of 120 miles
- Stations to charge between 4–10 vehicles

## Schedule

- Site selection primarily through 2017
- Development from Q2 2017 through end of 2018
- Operational end of 2017 through Q2 2019

*Creating A Clean, Affordable and Resilient Energy Future For the Commonwealth*



# Solar Updates

# Roxbury CC Ribbon Cutting

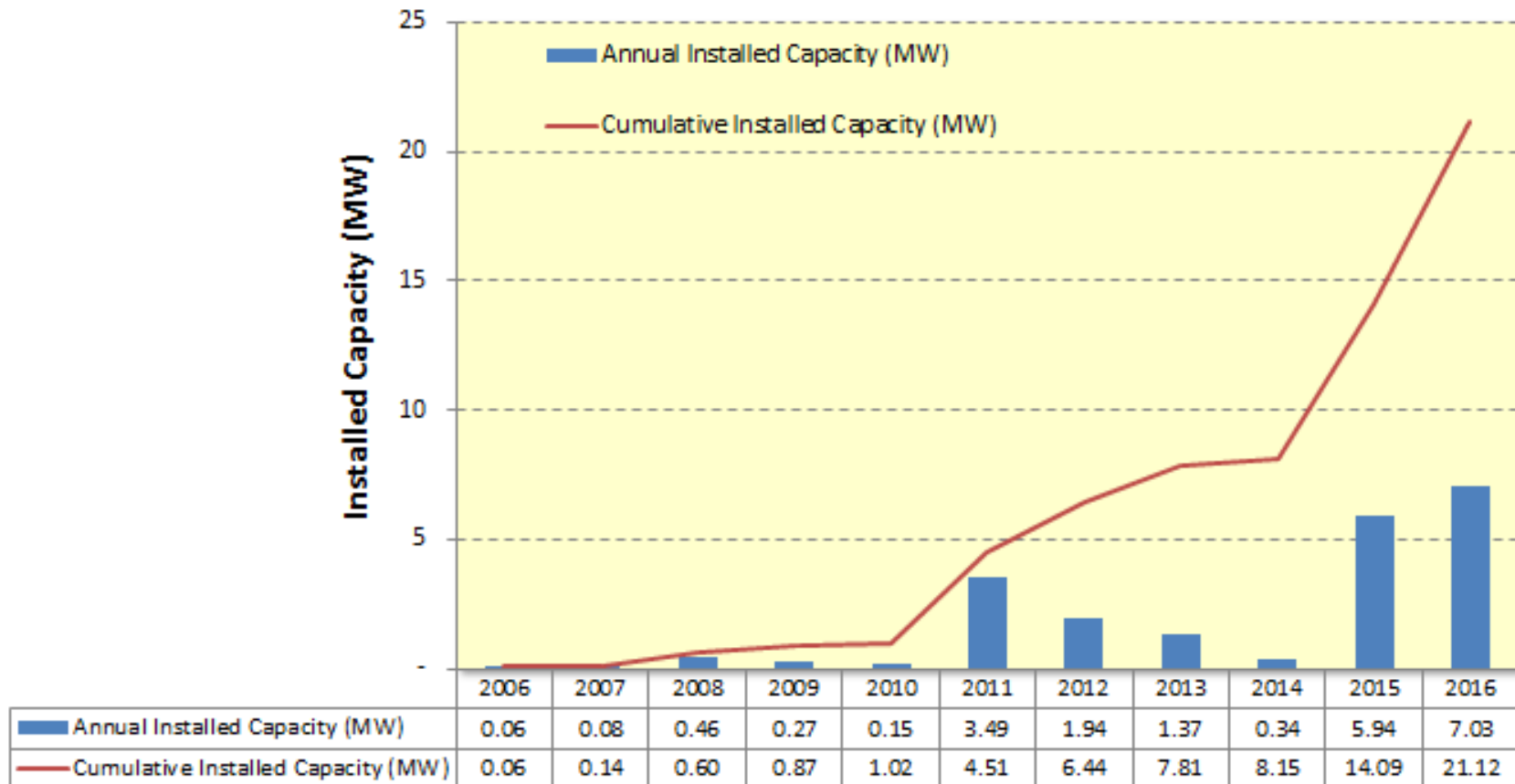
- 937kw solar canopy
- \$600,000 LBE solar canopy grant
- Canopy: est. \$5M savings over 20 yrs, from reduced electricity costs and projected SRECs
- 'Tri-level' energy project:
  - solar canopy
  - EV charging stations
  - ground source heat pumps
- Key piece of larger \$20M energy project across campus



# State Agency Progress

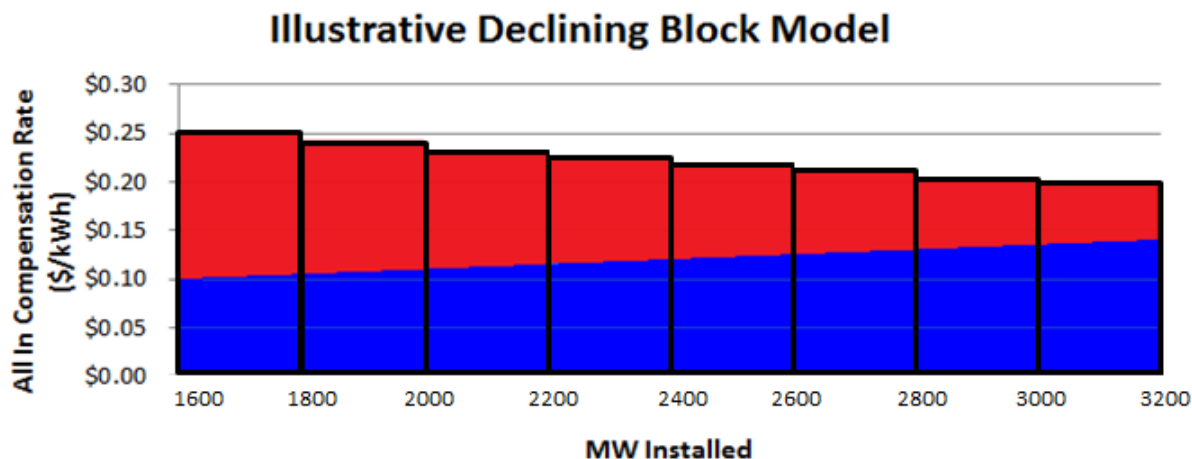
- **21.1 MW** of solar installed, additional **3.5 MW** underway/in development
  - **9.2MW** of installed solar capacity is solar canopies
  - Total installed capacity is equivalent to the electricity usage of **3,216 Massachusetts homes**
- Solar installations at **34** agencies/campuses at **59** sites across MA

## Solar Installations at State Facilities



# Solar MA Renewable Target (SMART)

- 1,600 MW AC declining block tariff program
- Each “block” is 200 MW;
  - One statewide rate for all IOUs
  - Block allotment by utility based on distribution load
- Size-based base compensation rate
  - Policy-, location- and off-taker based adders that can be aggregated
  - Rates and adders decline by 4% after each block
  - For state projects: 20 year term
- Two important definitions: **standalone** vs. **behind-the-meter** (compensation structure will vary)
- Maximum project size of 5 MW per parcel



# Setting the Base Rate

- Initial competitive procurement (100 MW) will establish base compensation rate for projects > 1 MW
  - Indices will be used to set rates for all other project size categories (see table below)
  - State entities cannot participate in initial procurement but can reserve Block 1 capacity through remaining 100 MW allotment

Capacity Based Compensation Rates (kW AC)			
Generation Unit Capacity	Capacity Based Rate Factor (% of Clearing Price)	Capacity Based Rate (\$/kWh)	Term Length
Low income less than or equal to 25 kW AC	230%	\$0.3450	10-year
Less than or equal to 25 kW AC	200%	\$0.3000	10-year
Greater than 25 kW AC to 250 kW AC	150%	\$0.2250	20-year
Greater than 250 kW AC to 500 kW AC	125%	\$0.1875	20-year
Greater than 500 kW AC to 1,000 kW AC	110%	\$0.1650	20-year
Greater than 1,000 kW AC to 2,000 kW AC	100%	\$0.1500	20-year
Greater than 2,000 kW AC to 5,000 kW AC	TBD	<=\$0.1400	20-year

# Adder Values

Location Based Adders	
Type	Adder Value (\$/kWh)
Building Mounted	\$0.02
Brownfield	\$0.03
Landfill	\$0.04
Solar Canopy	\$0.06

Off-taker Based Adders	
Type	Adder Value (\$/kWh)
Public Entity	\$0.02
Community Shared Solar (CSS)	\$0.05
Low Income Property Owner	\$0.03
Low Income CSS <sup>1</sup>	\$0.06

1. Must be at least 50% R-2 customers

Solar + Energy Storage	
Type	Adder Value (\$/kWh)
Storage + PV	Variable

- Adders from different categories can be aggregated
- Adders decline by 4% after each block
- Energy storage adder determined by:
  1. Ratio of storage capacity to solar capacity
  2. Duration of the storage
- Greenfield “**subtractor**” applied for any open space project that does not meet criteria



# Public Adder

- To qualify for public adder:
  - Project must be on public land AND:
    - 1) Be owned and operated by public entity, or
    - 2) Assign 100% of output to public entity

The following projects would qualify for public adder:

- Third-party owned project on municipal landfill that assigns 100% of its output to municipal accounts
- Roof-mounted system on campus administration building, owned and operated by the campus
- Large solar canopy on remote public parking lot, with no onsite usage (standalone) that sells electricity generated directly to utility

# Compensation for Energy through SMART

Eligible projects may receive compensation for energy through one of three mechanisms:

1. Net metering
2. On-bill crediting (**new option**)
3. Buy-all, sell-all rate for standalone facilities

With net metering and on-bill crediting,  
**value of energy split into tariff payment  
AND value of energy offset**



# Additional On-bill Crediting Option

- Offered as alternative to net metering (only for SMART projects)
- Must be established via a DPU approved process
  - Filed by the distribution companies in parallel to incentive program rulemaking
- Compensation rate for exported energy would likely be set at basic service rate

## Benefits:

- Single rate for all facilities
- Allows credits to be transferred to off-takers w/out net metering
- No caps (overall or 10 MW public)
- No single parcel rule
- Fewer limitations regarding off-takers and streamlined administrative process

# Determining Your “All-in Rate”

- All-in rate determined by project size and type
- Questions:
  - What SMART “block” will your project qualify under?
  - What is your project size?
  - What type of solar? (i.e. ground, canopy, landfill, etc)
  - Who are the off-takers? (i.e. public, low income)
  - Is storage included? If so, how much?
- Behind-the-meter vs. standalone projects have **same all-in rate**

# Determining Your “All-in Rate”

- **Example:**

- What SMART “block” will your project qualify under?  
**Block 1**
- What is your project size?  
**900 kW; base rate = \$0.1650**
- What type of solar? (i.e. ground, canopy, landfill, etc)  
**solar canopy; + \$0.06 solar canopy adder**
- Who are the off-takers? (i.e. public, low income)  
**Owned and operated by public entity on public land;  
+\$0.02 public adder**
- Is storage included? If so, how much?  
**No storage**

All in rate =  $\$0.165 + \$0.06 + \$0.02 = \mathbf{\$0.245}$

**Note: All-in rate never changes, no matter how you are compensated for energy**

# Determining your Incentive Payment: Behind-the-Meter

- Recap: “All in Rate” = \$0.245

## Behind-the-Meter:

*Behind the Meter Solar Tariff Generation Unit Compensation Rate*  
= (Capacity Based Rate + Adders)  
– (Three year average of Volumetric Delivery Rates  
+ Three year average of Basic Service Rate)

- The 3-yr avg. volumetric delivery rates + 3-yr avg. basic service rate for project’s rate class is \$0.14/kWh
- The incentive rate = \$0.245 - \$0.14 = \$0.105
- Project owner receives **\$0.105/kWh** produced from utility for 20 years
- Value does not change as energy values change; **incentive is determined once** at the time the project is qualified under SMART
- Project is approved for on-bill crediting for excess electricity
- Total value of project:
  - \$0.105/kWh produced (fixed; cash) +
  - \$0.14/kWh consumed onsite (variable; avoided cost) +
  - \$0.14/kWh of on-bill or net metering credits (variable; avoided cost)

# Determining your Incentive Payment: Standalone w/Off-takers

- Recap: “All in Rate” = \$0.245

## Standalone:

- Project is approved for net metering credits assigned to other accounts
- Value of energy generated is \$0.18/kWh (net metering rate)
- The incentive rate =  $\$0.245 - \$0.18 = \$0.065$
- Project owner receives **\$0.065/kWh** from utility for six months, until incentive rate is re-calculated
  - Project owner still receives incentive for 20 years but value will change each time on-bill credit or net metering value changes
- Total value remains fixed but amount received in incentive payment vs. credits will change as energy values change
- Total value of project:  
\$0.065/kWh produced (variable; cash) +  
\$0.18/kWh net metering credits (variable; avoided cost)

# Determining your Incentive Payment: Standalone w/No Off-takers

- Recap: “All in Rate” = \$0.245

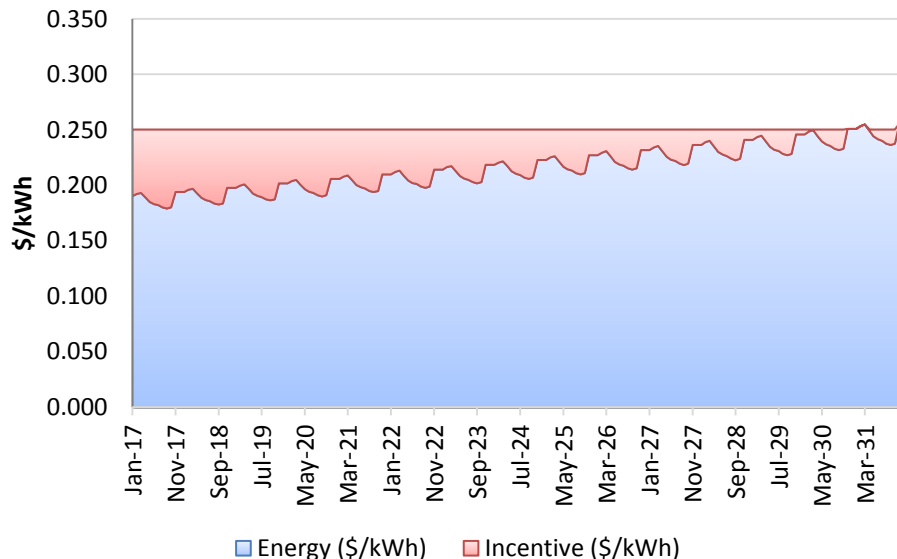
## Standalone:

- Project is registered as qualifying facility
- Project owner receives **\$0.245/kWh** produced from utility for 20 years
- Value does not change as energy values change; **incentive is determined once** at the time the project is qualified under SMART
- Total value of project:  
\$0.245/kWh produced (fixed; cash)

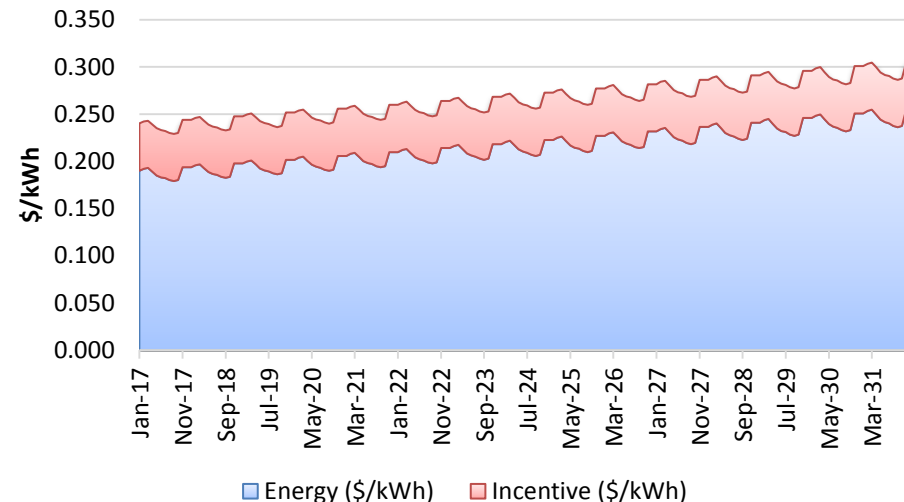
# Standalone Vs. Behind-the-Meter

- Behind-the-Meter:
  - Value of cash incentive fixed for 20 year term
- Standalone:
  - Value of cash incentive changes as value of energy changes (unless a qualifying facility)

**20-year NEM Medium System (25-250 kW) Payments (Standalone)**



**20-year NEM Medium System (25-250 kW) Payments (Behind-the-Meter)**



# SMART Webinar for Public Entities

Reminder – Recording, presentation and Q&A posted on LBE website:

- <http://www.mass.gov/eea/energy-utilities-clean-tech/webinar-future-and-archive.html>



# Tradesperson Installation, Repair and Maintenance Services (TRD) Statewide Contracts



## *Overview*

Serving Public Buyers and Vendors of the Commonwealth of Massachusetts





Contract Overview

Contract Status

Contract Use

Interested Vendors

FAC100- MRO

# Contract Overview

## TRD Basics

- MGL c. 149; MGL c. 30, § 39M
- To date 3 Bids have been posted
  - TRD01, TRD02, TRD03
- Vendors awarded by County
- Contracts can be used for:
  - Construction, reconstruction, alteration, installation, demolition, maintenance or repair services
  - Materials
- Labor limited to \$50K or less for each engagement under the contract
- Pricing
  - % markup over prevailing wage
  - % markup for materials

# Contract Overview

## TRD Categories



<u><a href="#">TRD01</a></u>	<u><a href="#">TRD02</a></u>	<u><a href="#">TRD03</a></u>
Boiler Services	Asphalt Paving	Elevator
Drain Services	Carpentry	Exhaust Systems
Electrical Services	Excavation	Fire Prevention
Fencing	Masonry	Fire Suppression
General Contracting	Septic	Overhead Doors
Generator/Turbine Services		Signage
Glass/Window/Doors		Welding
HVAC/Sheet Metal Services		
Painting Services		
Plumbing Services		

# Contract Status

BID INFORMATION			
<b>id Number:</b>	80-17-1880-OSD03-OSD03-12111	<b>Description:</b>	TRD01 Trades
<b>archaser:</b>	Betty Fernandez	<b>Organization:</b>	Operational S
<b>epartment:</b>	OSD03 - OSD - Strategic Sourcing	<b>Location:</b>	OSD03 - OSD
<b>scal Year:</b>	17	<b>Type Code:</b>	SS - Statewide
<b>ternate Id:</b>		<b>Required Date:</b>	
<b>ifo Contact:</b>	Betty Fernandez, Sourcing Lead - 617 720 3133-Betty.Fernandez@state.ma.us	<b>Bid Type:</b>	OPEN
<b>urchase Method:</b>	Open Market		
<b>Pre Bid Conference:</b> BID DOCUMENTS ARE NOW AVAILABLE - PLEASE REFERENCE "Attachments" tab for all required bid forms.			
<b>Bulletin Desc:</b>			
<b>ip-to Address:</b>		<b>Bill-to Address:</b>	Strategic Sour 1 Ashburton F



- Open Enrollment Bids in COMMBUYS
  - Vendors have the opportunity to submit responses for 12 months from posting date
  - Bids will be reviewed and awarded on an ongoing basis by OSD
- Post 12 month submission deadline
  - Reopen bid every three months for a duration of three months
    - Subject to change based on discretion of SSST
- TRD01 is ready for use by eligible entities
  - Awards have not been made for TRD02 and TRD03 announcements will be made in [Buy The Way](#) once contracts are available for use

# Contract Use

TRD01

- Vendor Information
  - Bidder Response Sheet
    - Based on awarded trade categories
      - Includes: contact info, experience, pricing, locations, Supplier Diversity Office certified, etc.
  - Licenses and certifications
- [Contract User Guide](#)
- Quotes
  - Statement of Work template
- COMMBUYS guidance



# Interested Vendors

- Highly encourage buyers to reach out to their vendors
  - Flyers
  - Email templates
- Questions TRD01
  - Direct to Betty Fernandez – [Betty.Fernandez@MassMail.State.MA.US](mailto:Betty.Fernandez@MassMail.State.MA.US)
- Questions TRD02
  - Direct to Katherine Morse – [Katherine.Morse@MassMail.State.MA.US](mailto:Katherine.Morse@MassMail.State.MA.US)
- Questions TRD03
  - Direct to Lisa Westgate – [Lisa.Westgate@MassMail.State.MA.US](mailto:Lisa.Westgate@MassMail.State.MA.US)

# FAC100 Building Maintenance Repair and Operations

1. Electrical and Lighting Products and Supplies
2. LED Roadway and Outdoor Area Lighting
3. Plumbing and Heating Products and Supplies
4. HVAC and Refrigeration Products and Supplies
5. Roofing Products and Supplies
6. Lumber Products and Supplies
7. Envelope Systems, Products and Supplies
8. Concrete and Masonry Products and Supplies
9. Paint Products and Supplies
10. Environmentally Preferable Products

Category 10 is rolling enrollment until 3/31/2018, open to innovative EPP products within the Maintenance Repair and Operations categories.



# Technologies of the Day

*Technologies presented here are provided as examples for general informational purposes only and are not to be taken as an endorsement by the Leading by Example Program or any of its staff. Agencies interested in any of these technologies should make sure to conduct their own due diligence regarding product performance and procurement pathways.*

# Technologies of the Day (1)

- Evolve Showerhead hot-water sensor/stopper
  - Attachment to showerhead that slows water to a drip when it reaches temperature
  - Designed to reduce water waste while waiting for water to reach desired hot temperature
  - Water flow resumes when pulling drawstring attached to showerhead



<http://thinkevolve.com/>

# Technologies of the Day (2)

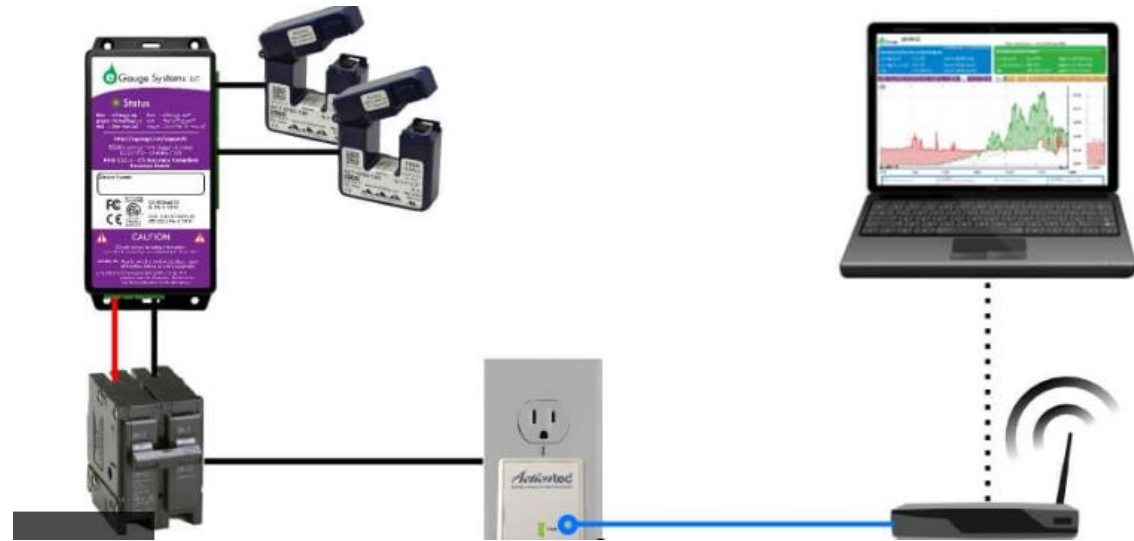
- Smart Flower retractable solar
  - 'All-in-one' solar system (residential-sized)
  - Sun-tracking and retractable functions
  - 4,000kWh/year estimated generation
  - Certain models have battery storage
  - Can be paired with EV charger
  - 'Plug and play' 'manufacturer claim



<https://www.smartflower.com/en>

# Technologies of the Day (3)

- EGauge electric data logger
  - 12-circuit energy meter
  - Total building consumption and circuit-level
  - Data viewable in online platform
  - Low cost option – varies with size and of building and size and number of circuits
  - No ongoing data charges



<https://www.egauge.net/>

# Outreach Documents Discussion

## 10 GREEN OFFICE TIPS

Here are a few simple things that *your office* can do to  
*lead by example* to reduce environmental impact and costs:

The Leading by Example Program works collaboratively with state agencies and public colleges and universities to advance clean energy and sustainable practices that reduce the environmental impacts of state government operations.

1. Create an office Green Team in partnership with facilities, fiscal, procurement, information technology (IT), and/or other key stakeholders
2. Hold regular meetings Green Team meetings; bring in sustainability guest speakers to your office, send green office tips, and highlight sustainability successes
3. Utilize Statewide Contracts to purchase recycled-content paper, ENERGY STAR equipment and appliances, green cleaners, remanufactured toner cartridges, and other environmentally preferable products
4. Work with facilities to set-up a recycling program that targets all applicable materials on the MassDEP waste ban list
5. Ensure that your recycling program makes recycling easy by pairing recycling bins next to all trash bins and ensuring signage clearly lists out all applicable recyclable materials
6. Partner with IT to set-up and enable an energy management protocol for all computers, ensuring computer and monitor power settings are as efficient as possible
7. Implement paper reduction strategies by ensuring that default print margin settings are set to 'narrow' or 'custom' and that double-sided printing is standard
8. Team up with facilities to implement the most efficient lighting practices across the office, including installing LED bulbs in task lighting and requesting occupancy sensors
9. Display signage to remind occupants of conference rooms or other sporadically used spaces to turn off lights, computers, projectors, or other electronics when leaving
10. Conduct an inventory of plug-load equipment (e.g. coffee makers, personal printers), consolidate duplicative or rarely-used electronics and turn them off when not in use

EXECUTIVE OFFICE OF ENERGY AND ENVIRONMENTAL AFFAIRS – DEPARTMENT OF ENERGY RESOURCES

[www.mass.gov/eea/leadingbyexample](http://www.mass.gov/eea/leadingbyexample)

GOVERNOR CHARLES BAKER  
LIEUTENANT GOVERNOR KARYN POLITO

EEA SECRETARY MATTHEW BEATON  
DOER COMMISSIONER JUDITH JUDSON

**DRAFT – NOT FINAL**

- *Feedback on content/structure?*
- *Could you/your site use this?*
- *How would you use/distribute this?*
- *What other topics would be useful?*

### Green Office Links and Additional Resources

- [Energy Star Green Team Checklist](#)
- [Environmentally Preferable Products on Statewide Contracts](#)
- [Massachusetts Desktop Computer Power Management Standards](#)
- [ENERGY STAR Refrigerator Best Practices](#)
- [MassDEP Waste Disposal Bans list](#)
- [MassDEP Reduce, Reuse, Recycle information webpage](#)
- [Massachusetts RecyclingWorks technical assistance program](#)
- [MassDEP Green Living webpage](#)
- [Reduce page margins in Microsoft Word](#)
- [US DOE Decision Guide for Plug and Process Load Controls](#)
- [Energy Efficiency Employee Education toolkit](#)
- [Saving Energy Through Lighting Strategies](#)



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[www.mass.gov/eea/leadingbyexample](http://www.mass.gov/eea/leadingbyexample)

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LIEUTENANT GOVERNOR KARYN POLITO

EEA SECRETARY MATTHEW BEATON  
DOER COMMISSIONER JUDITH JUDSON



# 10 Sustainability Programs and Resources in Massachusetts

*The Leading by Example Program works collaboratively with state agencies and public colleges and universities to advance clean energy and sustainable practices that reduce the environmental impacts of state government operations.*

This list is intended for Massachusetts employees, faculty, students, and others to implement their own sustainable practices that can help reduce our collective environmental footprint across an array of topic areas.

1. [energyCENTS \(Commonwealth Energy Tool for Savings\)](#) provides a single entry point to energy savings opportunities for MA residents, businesses, and institutions
2. [Mass Save®](#) is the Commonwealth's investor-owned utilities energy efficiency initiative, and provides access to product information, rebates, and no-cost home energy audits
3. [Energy Switch Massachusetts](#) is a web portal to assist MA residential and business electric consumers in shopping for electric supply products
4. [Mass Solar Loan](#) provides eligible MA residents access to low-interest, fixed-rate loans to support residential solar projects (and remember to access SREC incentives)
5. [MassCEC's Clean Heating and Cooling Programs](#) offer rebates to support the installation of residential renewable heating, hot water, and cooling technologies
6. [MassDEP Homeowner Resources](#) provides a comprehensive list for MA residents related to waste and recycling, and other important environmental information
7. [MOR-EV \(MA Offers Rebates for Electric Vehicles\)](#) is a program that issues rebates to eligible drivers for the purchase or lease of new electric vehicles in Massachusetts
8. [Commute.com from massRides](#) through MassDOT provides access to tools and programs for greener travel, including the NuRide rewards and Emergency Ride Home programs
9. [Park & Pedal](#) is a free network of parking lot hubs in the Greater Boston region for dual-mode vehicle and bicycling commuting into the city
10. [MA Environmental "Preserve the Trust" License Plates](#) are specialty MA plates that support environmental programs from protecting waterways to coastal ecosystems

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[www.mass.gov/eea/leadingbyexample](http://www.mass.gov/eea/leadingbyexample)

- *Feedback on content/structure?*
- *Could you/your site use this?*
- *How would you use/distribute this?*
- *What other topics would be useful?*

## Programs and Resources Website Links

- [energyCENTS \(Commonwealth Energy Tool for Savings\)](#)
  - [www.mass.gov/energycents](http://www.mass.gov/energycents)
- [Mass Save® \(residential energy efficiency for investor-owned utilities\)](#)
  - [www.masssave.com](http://www.masssave.com)
- [HELPS \(Home Energy Loss Prevention Services – residential energy efficiency for select municipal utilities\)](#)
  - [www.munihelps.org](http://www.munihelps.org)
- [Energy New England \(residential energy efficiency for select municipal utilities\)](#)
  - [www.ene.org/residential-audits](http://www.ene.org/residential-audits)
- [Energy Switch Massachusetts](#)
  - [www.energyswitchma.gov](http://www.energyswitchma.gov)
- [Mass Solar Loan](#)
  - [www.masssolarloan.com](http://www.masssolarloan.com)
- [Solar Renewable Energy Credits \(SRECs\) – Massachusetts solar incentive program](#)
  - [www.mass.gov/eea/energy-utilities-clean-tech/renewable-energy/solar/rps-solar-carve-out-2/](http://www.mass.gov/eea/energy-utilities-clean-tech/renewable-energy/solar/rps-solar-carve-out-2/)
- [MassCEC's Clean Heating and Cooling Programs](#)
  - [www.masscec.com/get-clean-energy/residential/clean-heating-and-cooling](http://www.masscec.com/get-clean-energy/residential/clean-heating-and-cooling)
- [MassDEP Homeowner Resources](#)
  - [www.mass.gov/eea/agencies/massdep/service/homeowner-resources.html](http://www.mass.gov/eea/agencies/massdep/service/homeowner-resources.html)
- [MOR-EV \(MA Offers Rebates for Electric Vehicles\)](#)
  - [www.mor-ev.org](http://www.mor-ev.org)
- [Commute.com from massRides](#)
  - [www.commute.com](http://www.commute.com)
- [Park & Pedal](#)
  - [www.parkandpedal.org](http://www.parkandpedal.org)
- [MA Environmental "Preserve the Trust" License Plates](#)
  - [www.mass.gov/eea/grants-and-tech-assistance/grants-and-loans/mass-enviro-trust/enviro-license-plates](http://www.mass.gov/eea/grants-and-tech-assistance/grants-and-loans/mass-enviro-trust/enviro-license-plates)

EXECUTIVE OFFICE OF ENERGY AND ENVIRONMENTAL AFFAIRS – DEPARTMENT OF ENERGY RESOURCES

[www.mass.gov/eea/leadingbyexample](http://www.mass.gov/eea/leadingbyexample)

# Agency/Campus data report template

## Background

- Agencies have been submitting energy data to LBE since 2003
- LBE collects and analyzes progress toward goals on a statewide basis
- Data is available by agency/campus upon request
- Review of data template examples and feedback for possible dissemination of agency/campus results to each entity



# LBE Updates

# LBE FY16 Data Updates

- **Data Collection Update:**

- Received tracking forms directly from 29 campuses & 6 agencies
- Finalizing contract data for oil, vehicle fuels, electricity and natural gas with OSD
- Working to input missing data & data from municipal light plants into MassEnergyInsight
- Updating historical data based on new and revised information

- **Preparation of FY2017 Tracking Form:**

- Estimated release date of September 1, 2017
- No major changes expected
- Review draft form in summer
- Working to improve data in MEI to reduce collection burden

# Solar Canopy Program Opportunity Notice

- \$2 million to support solar canopy and innovative solar projects
- Minimum size of 200kW (except for special circumstances)
- \$1.25 per watt for owned systems up to \$1 million
- \$0.85 per watt for PPAs up to \$750,000
- \$0.50 per watt for innovative solar projects up to \$250,000
- Projects must be completed within SRECII deadline
- EV Charging requirements
  - Up to 400 kW – 2 vehicles
  - Greater than 400kW – 4 vehicles
  - Pre-wiring requirements up to 10 stations/20 vehicles
- PON posted shortly

# Feasibility Study Program Opportunity Notice

- \$800K available through December 2018
- Eligible clean energy technologies include, but are not limited to: renewable thermal (biomass, solar thermal, air and ground source heat pumps, combined heat and power), solar PV canopies, innovative solar PV, energy resiliency, energy storage, and anaerobic digestion.
- Studies can be for one or multiple technologies
- \$100,000 maximum grant
- Applications accepted on rolling basis until 12/31/18
- Grant can cover full study cost or incremental cost of an additional clean energy portion of an existing study

# State Fleet Efficiency Program Opportunity Notice

- \$300K available only for executive branch state entities

Technology Type*	Award Amount**
After-Market Vehicle Conversions (Upfit or Retrofit)	100% of cost, up to \$20,000 per vehicle
Idle Reduction Technologies (for New or Existing Vehicles)	100% of cost, up to \$5,000 per vehicle
Hybrid Electric Vehicles	\$2,500 or incremental cost of hybrid (whichever is greater), up to \$5,000 per vehicle

- Some funds to OVM for leased vehicles
- Applications to DOER for agency owned vehicles

# Resiliency Study Consultant RFQ

To study the feasibility of utilizing clean energy technologies to enhance the energy resiliency at state-owned 24/7 residential & medical care facilities

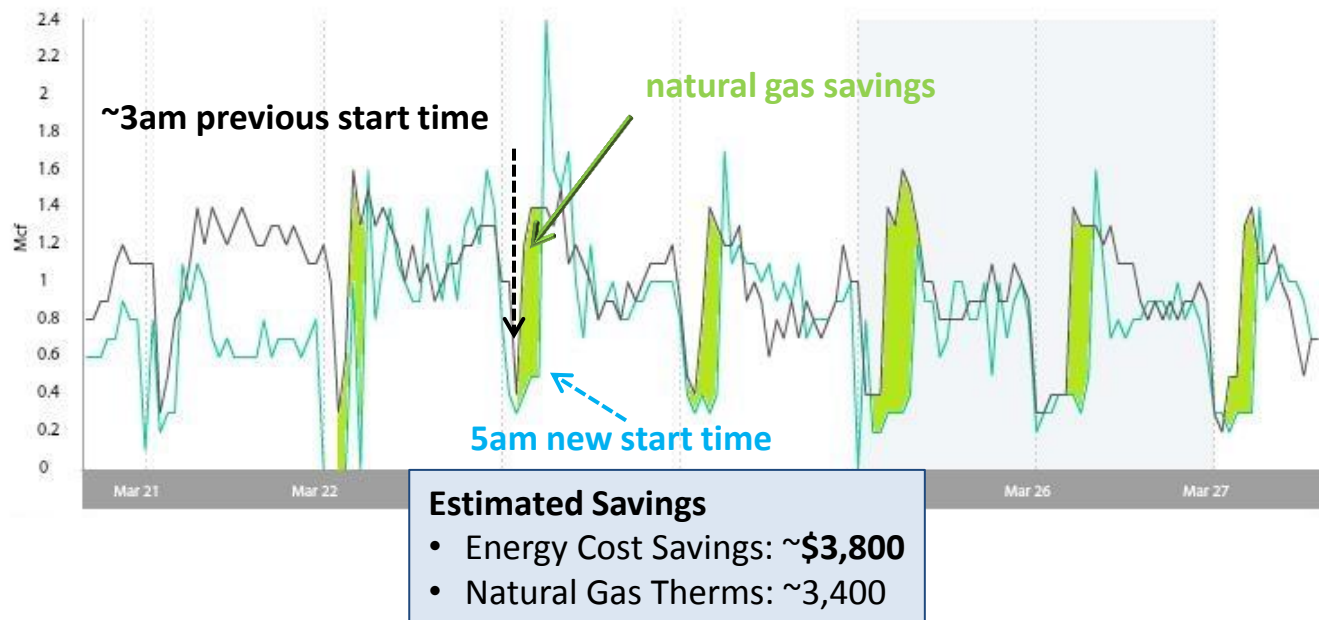
- April 26<sup>th</sup>: RFQ released under PRF62
  - BID#: BD-17-1041-ENE01-ENE01-15542 (Category 2)
  - BID#: BD-17-1041-ENE01-ENE01-15548 (Category 4)
- May 10: Bidder's conference call
- June 19<sup>th</sup>: Proposals due to DOER
- July 2017 through January 2018: study period

# Commonwealth Building Energy Intelligence (CBEI)

- Full site data access and trainings expected complete by 6/30/17
  - 18 trainings complete, 14 in progress/scheduled (of 39 sites)

## Implemented Measure Example

- UML Rec Center 'Optimal Start/Stop' system varies time based on outside air temp.
  - Building was using significant natural gas starting at approx. 3:00am
  - 'Manual' 5:00am start in place about 6 weeks



- Then, manual start implemented at additional 7 UML buildings
  - (Total savings/results TBD)



# Earth Month/Day Events Recap



Photo Credit: Holly States



Photo Credit: DCAMM



Photo Credit: UMass Dining



Photo Credit: Kevin O'Shea



Photo Credit: Suzanne Wood



Photo Credit: Steve Bandarra



Photo Credit: Meghan Moore



# Possible MAFMA Training

- MAFMA querying interest in possible “Green Awareness Program” training July/August in Woburn
- Focus on maximizing energy efficiency of existing equipment, specifying most efficient systems available for the application and available budget, using renewable and sustainable fuels, and conserving water
  - Section 1: Core knowledge of Energy Management and Analysis
  - Section 2: Green Heating - Ventilation - Air Conditioning - Refrigeration
  - Section 3: Electrical Generation and Consumption
  - Section 4: Green Plumbing

Email [francis.tagan@state.ma.us](mailto:francis.tagan@state.ma.us) if you/your staff would be interested

# Zero Net Energy Buildings

# Growing List

- North Shore Community College Health Professions & Student Services Building (2011)
- DFW Field Headquarters, Westborough (2014)
- Bristol Community College Sbrega Health & Science Building (2016)
- DCR Walden Pond Visitor Center (2016)
- UMass Amherst Crotty Hall (2017)

5

buildings designed to the zero net energy standard



[UMass Amherst](#)

# 2011

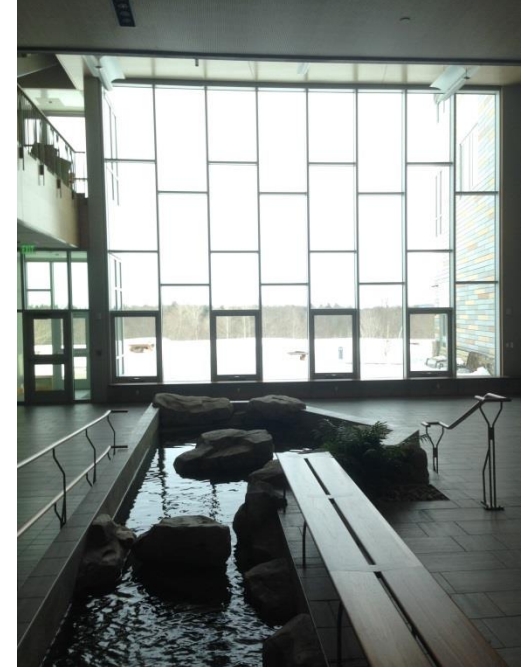
- 1<sup>st</sup> ZNE designed building
- **North Shore Community College Health Professions & Student Services Building**
- 58,000 SF



# 2014



- Designed as ZNE
- **Division of Fisheries and Wildlife Field HQ, Westborough**
- 37,000 SF





# 2016

- Designed as ZNE
- **Bristol Community College Sbraga Health & Science Building**
- 50,600 SF



# 2016

- Designed as ZNE
- **DCR Walden Pond Visitor Center**
- 6,500 SF





# 2017

- Designed as ZNE
- **UMass Amherst Crotty Hall**
- 16,800 SF





# ZNE Case Study – DFW Headquarters

After first two years of operation (2015-16), building was close to ZNE, generating **94%** of its consumption from solar

	Model	Actual (2015 & 2016)	Variance(2015 & 2016)
Building use kwh	302,598	356,092 & 366,058	+18% & +21%
Building EUI	22.6	26.6 & 27.4	+18% & +21%
Solar Generation	364,500	335,722 & 346,632	-8% & -5%
% of load covered by solar	120%	94.3% & 94.7%	-26% & -25%

# DFW Westborough Building Overview & Tour



*Creating A Clean, Affordable and Resilient Energy Future For the Commonwealth*

**DDER**

Massachusetts Department  
of Energy Resources